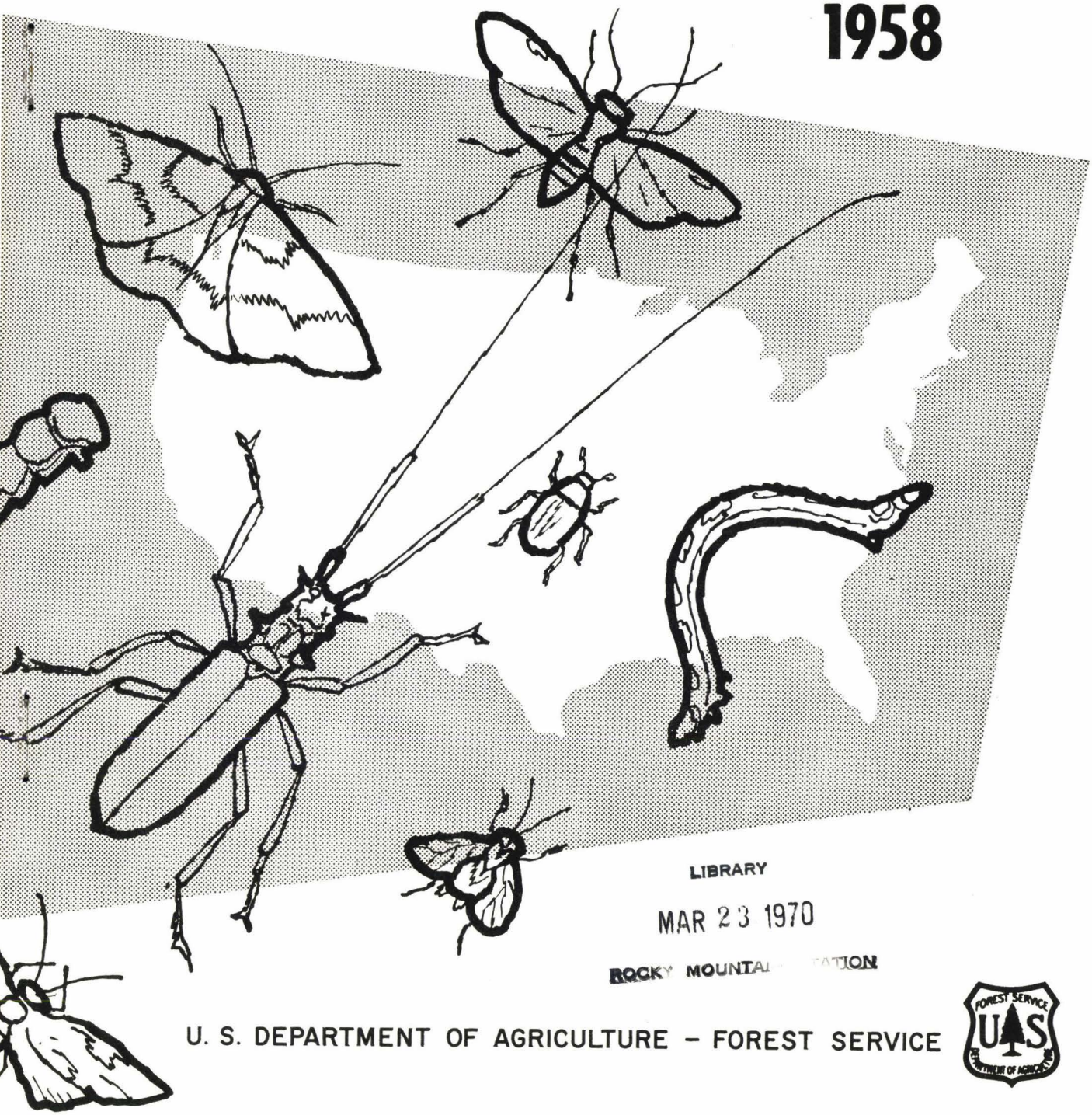
SB761
U74
1958

A Status Report

FOREST INSECT CONDITIONS

1958



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Acknowledgement

This compilation of forest insect conditions in the United States is based on information submitted by the Forest and Range Experiment Stations; public and private land-managing agencies; state forestry, entomology, and conservation organizations, lumber companies, timber operators, and private landowners.

A STATUS REPORT ON FOREST INSECT CONDITIONS IN THE UNITED STATES - 1958

Compiled by
Division of Forest Insect Research

CONDITIONS IN BRIEF

The scope and severity of forest insect infestation in the United States during 1958 were not markedly changed from conditions existing in 1957. While some of the pest species increased in numbers in some sections of the country, other species declined elsewhere thus offsetting what otherwise would have been more damage and destruction than in prior years.

1. Several species of bark beetles occurred in outbreak numbers in many places in the coniferous forests of the West and South but the extent of outbreaks and their severity were somewhat reduced from prior years. The reduction of bark beetle infestations was brought about largely by suppressive control action on the part of public and private agencies. Low winter temperatures, however, particularly in the southeastern States, also killed a large percentage of southern pine beetle broods, thus aiding the effectiveness of direct control action in that area. Nationwide, a total of 784,517 infested trees, cull logs, and stumps were treated with insecticides or salvaged from outbreak areas.

2. The spruce budworm continued in epidemic status in much of the spruce-fir forests from coast to coast. Infestations were most severe in Maine, Minnesota, the northern Rocky Mountains, Arizona and eastern Oregon. Lesser infestations occurred in Wisconsin and Michigan; in the central and southern Rockies; in New Mexico; and in one area in northeastern California. Aerial spraying to reduce epidemic populations and thus prevent damage and destruction of forest stands was undertaken on a total of 1,231,911 acres; 301,861 in Maine; 12,000 in Minnesota; 100,000 in Arizona and 818,050 in Oregon. A lesser acreage is expected to be sprayed during 1959.

3. A variety of other defoliating insects occurred in outbreak numbers in all sections of the country. Several species of pine sawflies were particularly abundant in the East and South; needleminers were destructive in the West; tent caterpillars were numerous in the Lake States, the Northeast and the Southwest; and loopers, leafrollers, webworms, tussock moths were abundant in various other places nationwide. Aerial spraying on 11,066 acres was undertaken to suppress epidemic populations, and in most instances excessive damage to the forest resource was averted.

4. Twig and terminal-feeding insects were quite prevalent in most sections of the country and excessive damage was caused in many places, particularly in areas where pine stands are being regenerated by planting. Suppressive action for control on some 5,000 acres was initiated against such pests as the white pine weevil, European pine shoot moth, Saratoga spittlebug and pine reproduction weevils in many areas to protect plantations and reproduction.

5. The balsam woolly aphid continued in epidemic proportions in large areas in the Northeast and in the Pacific Northwest, and the pest was destructive in stands of Fraser fir in the Southeast. Major effort was made during the year to introduce and establish predaceous beetles from Europe and Japan for biological control. Effectiveness of the predators in control of the aphid is not yet known, but there are indications of successful colonization of two of the species liberated.

6. Outbreaks of the Douglas-fir tussock moth were discovered for the first time in fir forests of New Mexico and at a new location in Arizona. In addition, the New Mexico fir looper re-appeared in outbreak numbers on a portion of the Lincoln National Forest, the first since 1952. These infestations, discovered late in the year, will be treated during 1959 in an effort to prevent undue loss of the resource being attacked.

CONDITIONS IN ALASKA

Forest insect activity in Alaska increased during the year and continuing infestations at moderate levels are expected in several areas in 1959. The Alaska spruce beetle increased in portions of the white spruce stands on the Kenai Peninsula and for the first time in two years, new infestation centers of hemlock sawfly and black-headed budworm occurred at several locations in southeast Alaska. The spear-marked black moth which erupted as an epidemic in stands of paper birch on some 5,900,000 acres near Fairbanks in 1957 began to decline during the summer months due to parasites and a disease organism affecting the larval populations. The Sitka spruce beetle was endemic over its entire range and no further damage was reported by Ips beetles. There was no direct action undertaken to suppress any of the insect infestations in Alaska.

CONDITIONS IN CALIFORNIA

Losses due to forest insects decreased to some extent in California. In some of the high elevation recreational forests, however, this was not the case. Lodgepole pine, in particular, continued to sustain severe infestations of the mountain pine beetle and lodgepole needleminer. Jeffrey pine in these high elevation forests also was damaged by Jeffrey pine beetle and late in the year signs of increased bark-beetle activity began to show up in several localities throughout the state. The status of the major insects is as follows: The western pine beetle in ponderosa pine decreased; the mountain pine beetle in lodgepole pine increased; the Jeffrey pine beetle was active in many parts of the state; the Douglas-fir beetle showed signs of increased activity in northwestern California; the California flatheaded borer in ponderosa and Jeffrey pine occurred in outbreak numbers in southern California; pine engravers caused little damage early in the year, but showed signs of increasing late in the fall; the fir engraver was epidemic in only a few local areas; the lodgepole needleminer remained epidemic in lodgepole pine, with one new center of infestation discovered; seed and cone insects caused serious damage and for the first time in many years Douglas-fir engraver infestations were common in young Douglas-fir in northwestern California. Suppressive action to control bark beetles and flatheaded borer was intensified in southern California and a method was developed for control of the lodgepole needleminer.

CONDITIONS IN OREGON AND WASHINGTON

Outbreaks of forest insects in Oregon and Washington totalled slightly over 2 million acres, approximately the same as occurred in 1957. The spruce budworm, balsam woolly aphid, Douglas-fir beetle, mountain pine beetle, and western pine beetle accounted for most of the outbreak acreages. Aerial spraying of 818,050 acres, coupled with natural control, reduced the spruce budworm to the lowest point since 1947 and the population trend is downward. Tree-killing by the balsam woolly aphid declined, but the area

affected expanded and the insect population flared up late in the season. Efforts were intensified during the year to introduce predaceous beetles from Europe and Japan for biological control of the aphid infestations. A severe outbreak of the Douglas-fir beetle developed in southern Oregon but there were indications that the infestation will decline during 1959. The western pine beetle and mountain pine beetle flared up generally in the pine regions of both states but only the former species is viewed with alarm currently. Suppressive control for the Douglas-fir beetle was limited to salvage of infested trees. The selective removal of high risk trees from eastside stands of ponderosa pine was intensified as an indirect measure for control of western pine beetle.

CONDITIONS IN THE NORTHERN AND SOUTHERN ROCKY MOUNTAINS.

Forest insect infestations in the northern Rocky Mountains were similar in most respects to conditions during the previous year. Bark beetle activity, especially that of the mountain pine beetle increased and the Douglas-fir beetle appeared to be entering a new cycle of destructiveness. The Engelmann spruce beetle was epidemic only in local areas in and adjacent to previous outbreak centers. Defoliating insects, as a group, were the principal pests in the region. Although infestations of spruce budworm were static, intensity of tree defoliation increased in some areas. The larch casebearer, a relative newcomer in the northern Rockies, spread to additional areas. Although there was no aerial spraying for control of spruce budworm during the year, action programs were continued for control of Engelmann spruce beetles and 159,725 infested trees were salvaged.

In the central Rockies, losses increased and infestations of outbreak proportions occurred on over a million acres. The Engelmann spruce beetle continued as a problem in Colorado and Wyoming and new epidemics developed on portions of three national forests in Utah. The Black Hills beetle, mountain pine beetle, and Douglas-fir beetle increased in numbers and outbreaks were numerous and wide-spread. For the first time in several years, heavy defoliation of fir, spruce, and pine by spruce budworm occurred in Colorado and budworm infestations continued in Idaho. The Great Basin tent caterpillar was noted throughout southern Colorado and heavy defoliation of the aspen type is forecast again for 1959.

CONDITIONS IN THE SOUTHWEST

Insect activity decreased sharply in Arizona and New Mexico even though infestations of some species were more severe than in past years. Tree-killing caused by bark beetles was greatly reduced from levels of 1957 and defoliation of ponderosa pine by a needleminer almost disappeared. In contrast, damage to fir and spruce by spruce budworm increased; two additional areas were found infested by Douglas-fir tussock moth; and infestations of Douglas-fir beetle were more acute. Logging infested trees was continued as a measure for control of pine bark beetles, supplemented to the extent needed by spraying infested trees with toxic oils. The

spruce budworm was brought under control by aerial spraying on 100,000 acres in Arizona and tent caterpillars were combatted by introducing virus organisms into outbreak centers or by aerial application of DDT sprays.

CONDITIONS IN THE LAKE STATES, CENTRAL STATES AND THE NORTHEAST

The scope and intensity of the more important forest insects in the Lake States, Central States and the Northeast was not greatly different in 1958 from conditions the previous year. The spruce budworm caused moderate to severe defoliation of balsam fir in Maine, Minnesota, Wisconsin and Michigan and aerial spraying was undertaken to suppress infestations on 313,861 acres. Populations of the jack-pine budworm were generally light throughout Michigan and Wisconsin and suppressive controls were not needed in any area. Other pest species such as the European pine shoot moth, Saratoga spittlebug, white-pine weevil, larch sawfly, pine sawflies, tent caterpillars, the gypsy moth, and others were not materially changed from conditions in 1957. In all cases where infestations were most severe, suppressive controls were initiated to protect the forest resource. Control was needed, for example, to suppress the Saratoga spittlebug, shoot moths, sawflies, weevils, tent caterpillars, and the gypsy moth. The latter control program, a cooperative undertaking between Agricultural Research Service and the States involved spraying on 510,000 acres.

CONDITIONS IN THE SOUTHERN AND SOUTHEASTERN STATES

The insect situation in the Southern States is much improved over conditions of a year ago but several pests continue as a constant threat to the timber stands. Early in the year, rapidly developing infestations of southern pine beetle seriously threatened stands of southern pines in the Big Thicket area of southeast Texas but all were effectively suppressed by public and private agencies by late summer. In the South and Southeast, tree-killing by the major bark beetles was less than has been the case for the past several years. However, action programs in control involved spraying or salvaging over 415,000 trees. The extreme low temperatures of 1957-58 killed most of the larval broods of the southern pine beetles in the Southeast and for unknown reasons, black turpentine beetle activity diminished almost entirely by mid-year. Other insects, however, occurred in outbreak status over large areas and are of considerable concern; sawfly infestations were epidemic in Virginia, North Carolina and in north-central Florida; and an outbreak of the elm spanworm spread over 570,000 acres in Georgia, Tennessee and North Carolina. The balsam woolly aphid, a new pest in the Southeast, threatens the fir resources on Mt. Mitchell and in other areas in North Carolina.

Suppressive controls were not undertaken for sawfly and spanworm infestations although methods for doing so were developed and will be put to use, if needed, during 1959. Missible oil sprays will be tried on a pilot basis for control of woolly aphid on high value trees in heavily-used recreational areas in North Carolina.

STATUS REPORT ON INSECT PESTS

MOUNTAIN PINE BEETLE, Dendroctonus monticolae Hopk. - The Mountain pine beetle, a serious pest of the more important species of pines in the Western States, occurred in outbreak proportions in many areas. Stands of lodgepole pine in the Rocky Mountains were most affected but outbreaks also were reported in other tree species in other Western States as well.

In the lodgepole pine forests of the Intermountain Region, infestations continued on an upward trend. Many epidemic areas have increased in size and some new centers of infestations developed. Currently, some 22 epidemic infestations occur in five national forests in Utah, south Idaho and western Wyoming, and others are known at Glacier and Grand Teton National Parks, and at other locations. The largest infestation reported, and one that poses a severe threat to large volumes of lodgepole pine, is on the Wasatch National Forest in Utah. In this area, more than 146,000 gross acres are infested and some 110,000 trees were attacked and killed during the year. In Oregon and Washington, infestations in lodgepole pine decreased whereas in California the beetle continued to be very destructive at Yosemite National Park and in one area in Modoc County. In the same tree species in western Wyoming, an epidemic on the Shoshone National Forest continued unabated and some 10,000 additional trees were attacked and killed on the Wind River District during the flight season.

Infestations in western white pine occurred on some 268,000 acres on the Gifford Pinchot, Snoqualmie and Mt. Baker National Forests in Washington and on the Willamette National Forest in Oregon. The trend of these infestations, however, fluctuated both up and down.

Few infestations of any consequence were reported in stands of sugar pine in the Pacific Coast states but outbreaks in second-growth ponderosa pine did occur in a few localities. At Crystal Bay, Nevada, the beetle remained epidemic and an increasing rate of loss in similar stands was reported in the Boise National Forest in Idaho.

The extent of mountain pine beetle infestations in all areas and in all host types in the Western States was such as to preclude initiation of suppressive control action in all areas. However, control was undertaken in outbreak areas in the lodgepole pine stands of Idaho, Utah, California and Wyoming and 71,900 trees were either sprayed with toxic oils or salvaged. In Nevada, the epidemic in second-growth ponderosa pine at Crystal Bay was brought under partial control by cooperative efforts of public and private agencies. In this area, 6,010 trees were either sprayed with toxic oils or logged.

ENGELMANN SPRUCE BEETLE, Dendroctonus engelmanni Hopk. - During the course of the past several years this major bark beetle has killed several billions of board feet of Engelmann spruce in the northern and southern

Rocky Mountains as well as in portions of the Pacific Northwest. It is noteworthy, therefore, that the rate of tree-killing in old outbreak centers is materially reduced. Although remnants of the epidemic in the northern Rockies still persists, infestations currently are confined largely to areas where spruce was preserved from logging in prior years. Most of the outbreaks now known in Montana and Idaho are confined to portions of the Flathead, Kootenai, Kaniksu, and Clearwater National Forests and, in the Beartooth Primative Area on the Custer National Forest.

New outbreaks of serious proportions were discovered early in the year on portions of three national forests in northeastern Utah. In these areas, populations developed to epidemic levels in windthrown trees in 1957 and some 150,000 standing trees were attacked and killed during 1958. In Colorado, beetle populations breeding in cull logs and windthrown trees along the edges of uncut strips of timber also attacked and killed some trees on the San Juan, Rio Grande and Gunnison National Forests and at a few other locations. Tree-killing in Oregon and Washington is at a reduced level and epidemic outbreaks were recorded on but 8,480 acres as compared to 32,000 acres in 1957. On the Wenatchee National Forest in Washington, 1,920 acres were infested. In Oregon, there were 3,040 acres infested, most of which was on the north half of the Umatilla National Forest. Broods in all trees in all areas were generally light and the trend of these infestations is downward.

Suppressive action for control of epidemic infestation centers was continued in Montana, North Idaho and southern Colorado. In Utah, a stepped-up control program was needed to confine the new epidemic in that area. In all, 251,500 trees were salvaged or sprayed with toxic oils.

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae Hopk. - Outbreaks of Douglas-fir beetle showed up extensively in southwestern Oregon during the spring months and elsewhere in Oregon and Washington later in the year. The most extensive infestations were recorded in the South Umpqua drainage and adjacent stands on the Rogue River National Forest but considerable tree-killing also was recorded on the Siskiyou and Siuslaw National Forests. Smaller centers of aggressive infestation occurred on the Okanogan National Forest and Colville Indian Reservation in eastern Washington and the combined acreage of outbreak in both states totalled 931,480 acres. In Montana and north Idaho, activity by the beetle also increased, particularly in Swan Valley adjacent to the Flathead National Forest, and in the Fisher River drainage in the Kootenai National Forest. On the St. Joe and Nezperce Forests in Idaho, large groups of trees were killed and the outbreak at Yellowstone National Park continued. In Colorado and Wyoming, infestations were recorded on a total of 41,330 acres, a part of which contained outbreaks of severe proportions.

Although a decrease in area of infestations was reported from Arizona and New Mexico, the beetle population in those states still remains at a high

level. In California, the insect continued in outbreak status in a portion of Siskiyou County where it has been epidemic since 1954. Elsewhere in the state, however, infestations were at a comparatively low level. Control of Douglas-fir beetle in all of the Western States was limited to the salvage of infested trees.

BLACK HILLS BEETLE, Dendroctonus ponderosae Hopk.- The Black Hills beetle, a major pest of ponderosa pine in the Rocky Mountains and the Black Hills of South Dakota, occurred in outbreak status in several areas during the year. In Wyoming, population increases as high as 4 to 1 were noted in the Big Horn Mountains and a similar ratio of increase occurred in portions of the Black Hills, and in Colorado. Total area of infestations in all areas was estimated at 77,290 acres. No new infestations were reported from Arizona and New Mexico and except for the long-standing outbreak on the Dixie National Forest in Utah, no other outbreaks of serious proportions are known elsewhere.

Direct control efforts against the Black Hills beetle involved spraying or salvaging 16,600 trees in portions of five states.

WESTERN PINE BEETLE, Dendroctonus brevicomis Lec. - Increased tree-killing by this important forest insect was general in the ponderosa pine forests of Oregon and Washington but was most evident on the Ochoco National Forest and the Warm Springs Indian Reservation in eastern Oregon. In Washington, infestations were most pronounced on the Okanogan National Forest and on the Yakima and Spokane Indian Reservations. Although all of these outbreaks still are in the light epidemic category, group tree-killing characterizing severe outbreaks is increasing. In California, infestations throughout most of the commercial timber zone were at low levels. Principal localities where the insect was noted in outbreak proportions were in Modoc County, Shasta County, and at Harris Mountain in Siskiyou County. Infestations in Coulter pine in Southern California also were more prevalent and more severe, but were below epidemic levels. In the northern Rockies, endemic loss conditions were the rule regionwide.

Although direct control action was undertaken to suppress outbreak populations of the western pine beetle in a few areas, the selective removal of high risk trees was intensified as an indirect measure for control. Salvage of infested trees also was used for control in many areas.

JEFFREY PINE BEETLE, Dendroctonus jeffreyi Hopk. - This tree-killing bark beetle, a pest only of Jeffrey pine in California, showed signs of increased activity during the year. Infestations of rather severe proportions were noted in the mature and overwinter pine stands in portions of Fresno County and at Lassen Volcanic National Park in Lassen County. In southern California, the insect was particularly damaging in some of the prized forest recreational areas and in large second-growth timber in the vicinity of Truckee, in

Placer County. The serious infestation reported in 1957 in the Cannel Meadows area in Tulare County is being brought under control by logging trees of high-risk to attack. Logging infested trees also was used for control in a few areas.

SOUTHERN PINE BEETLE, Dendroctonus frontalis Zimm.- The scope and severity of southern pine beetle infestations in the southern and southeastern states was much reduced in 1958 from the epidemic levels which have persisted for the past several years. The decrease in beetle activity in the Southeast is attributed largely to extreme low winter temperatures which killed a large percentage of larval broods in the infested trees. However, populations also were reduced by logging and spraying a large number of infested trees. In the South, decreased beetle activity also was brought about by the concerted efforts of public and private agencies to suppress populations by spraying and salvaging about 75,000 infested trees. New infestations of serious proportions were reported from Tyrrell and Hyde Counties, North Carolina, and from the Big Thicket area of Southeast Texas during the early spring months. However, the infestations in North Carolina subsided from unknown causes by year-end and the Texas outbreak was suppressed by treating 1,500 trees. No other infestations of damaging proportions are now known in the southern and southeastern states.

BLACK TURPENTINE BEETLE, Dendroctonus terebrans (Oliv.)- The black turpentine beetle continued to be a serious pest of pine in the southern and southeastern states. However, the scope and severity of losses caused by the beetle in 1958 were somewhat less than for the past several years. In the Southeast, for example, there were no serious infestations reported since early summer despite increased cuttings in several areas where the insect had been a major problem in prior years. A similar lessening of beetle activity occurred in the Southern States but new build-ups of populations late in the fall months are a potential source of trouble in many areas in Mississippi and Alabama. In the latter areas, attacks were especially common where timber was cut at intervals of several months--first for poles and piling, next for sawtimber, and finally for pulpwood. When cutting was terminated, beetles emerging from stumps spread and attacked standing trees, killing them by force of numbers.

Despite the decrease in severity of infestations, suppressive controls by spraying infested stumps or the basal portion of standing trees were continued and a total of 320,000 stumps and trees were treated with toxic chemicals.

SOUTHWESTERN PINE BEETLE, Dendroctonus barberi Hopk.- The southwestern pine beetle, together with an association of Ips beetles and other Dendroctonus species, was reported to have killed large numbers of ponderosa pines on some 535,000 acres in Arizona and New Mexico. Tree-killing was most severe on portions of the Coconino National Forest and the Fort Apache

Indian Reservation in Arizona and on the Cibola National Forest in New Mexico. In Nevada, the infestation at Charleston Mountain continues at a high level despite continued efforts to suppress populations by direct means. In this latter area, 339 trees were treated in the control program.

ROUNDHEADED PINE BEETLE, Dendroctonus convexifrons Hopk. - The roundheaded pine beetle, often occurring in association with other bark beetles in beetle-killed ponderosa pine in the Southwest, was not reported as a problem in any area during 1958. A small outbreak on Mt. Graham, Coronado National Forest, Arizona was suppressed in August by treating 29 infested trees and no additional tree-killing of any consequence has been found since that time.

ALASKA SPRUCE BEETLE, Dendroctonus borealis Hopk. - Increased activity of the Alaska spruce beetle was reported in stands of white spruce at several places on the Kenai Peninsula in Alaska. Several large groups of dead and dying trees occurred along Resurrection Creek, Palmer Creek, Granite Creek, and Quartz Creek and tree-killing is expected to continue at a fairly high level in and adjacent to the infested areas during 1959. To date, no action has been undertaken for control.

SITKA SPRUCE BEETLE, Dendroctonus obesus Mann. - The recent outbreak of the Sitka spruce beetle in the vicinity of Blackstone Bay in southeast Alaska subsided completely during the year. No other infestations were reported, and populations of this major pest are believed to be at the lowest levels of the past several years.

LODGEPOLE PINE BEETLE, Dendroctonus murrayanae Hopk. - The lodgepole pine beetle was reported for the first time in several years from a number of drainages of the Gallatin National Forest in Montana. The beetle is not ordinarily a serious pest of lodgepole pine and beetle-attacked trees this year were reported as having been previously injured by porcupines pitch moths, or mountain pine beetles. No control was needed.

CALIFORNIA FLATHEADED BORER, Melanophila californica Van Dyke - The California flatheaded borer continued in epidemic status, alone or in association with one or more species of pine bark beetles in many places in California. Tree-killing by the borer in southern California was quite heavy, enough so as to prompt a stepped-up program in control by salvaging infested trees, logging high risk trees, and in some cases by spraying with toxic oils.

PINE ENGRAVER BEETLES, Ips spp. - Green slash created by logging, windstorms, right-of-way clearings, and in other ways often is responsible for outbreaks of pine engraver beetles in and adjacent to disturbed areas. Reports from many sections of the country about flare-ups of engraver beetle infestations made mention of their occurrence in association with

fire-killed and wind-thrown timber and in areas disturbed by logging. In the South, three species of Ips beetles, I. avulsus Eichh., I. calligraphus Germ., and I. grandicollis Eichh., were reported from scattered locations in localized areas near burns and logging operations, and in overdense stands. In the Southeast, the beetles also occurred in localized areas adjacent to stands disturbed by logging. For the most part, attacked trees were scattered except in eastern and southeastern Georgia where group-killing occurred in areas as large as 1/2 acre.

In the coniferous forests of the western states, Ips beetles were generally at a low endemic level. Damage caused by I. oregonis Eichh. in Oregon and Washington was the least in many years and outbreaks were recorded from only 11,000 acres. In California, I. confusus Lec. caused only light damage until the fall months when activity increased along the coastal areas in the central portion of the state. Damage in New Mexico and Arizona by I. lecontei Sw. I. oregonis Eichh. and I. ponderosae Sw. was extensive and quite serious because one or more of the species usually made the initial attack in the top portion of pines which later were attacked and killed by other bark beetles. The extensive infestation of I. lecontei in the pinyon-juniper stands in New Mexico declined to an extremely low level due to high mortality of overwintering adults.

For the first time in several years, engraver beetles were abundant in nearly all of the Northeastern States. In all areas where Ips-killed trees were merchantable major efforts were made to salvage them. Except for salvage and preventive measures, no other efforts were made for control.

FIR ENGRAVER, Scolytus ventralis Lec. - There was little change in conditions of infestations of fir engraver beetles in Oregon and Washington and outbreak areas which totalled 22,000 acres, approximately the same as last year, were evenly divided between the two states. Similar conditions occurred in California and outbreaks for the state as a whole were quite localized and losses were moderate. Tree-killing in the fir resources of the central Rocky Mountains, however, were severe in some areas and infestations on some 98,000 acres, mixed with Dryocoetes confusus Sw. occurred on portions of the Grand Mesa, Uncompahgre, Rio Grande, San Juan, White River, Medicine Bow and Arapaho National Forests. In New Mexico, a new infestation of severe proportions on 4,480 acres was discovered on the Lincoln National Forest and the rate of tree-killing in the fir stands on the Sandia Mountains continued at high levels. In this latter area, infestations are reported to have spread to an additional 2,000 acres. D. confusus decreased sharply in northern New Mexico and tree-killing, now at moderate rates, is confined to portions of the Carson and Santa Fe National Forests.

DOUGLAS-FIR ENGRAVER, Scolytus unispinosus Lec. - For the first time in many years this insect was reported in outbreak status in parts of California. In cutover lands in Humboldt and Mendoceno Counties, numerous groups of young Douglas-firs were heavily infested and other infestations occurred in scattered locations southward.

SILVER FIR BEETLES, Pseudohylesinus spp.- During the past several years, one or more species of fir engraver beetles have caused severe tree-killing in fir stands in portions of Oregon and Washington. During 1957, infestations dropped to near endemic levels. In 1958, however, populations increased and tree-killing was noted on some 5,000 acres as compared to only 1,120 acres infested last year. The severity of infestations currently is much less than was experienced in the recent epidemics, but broods currently were reported as aggressive and the trend of loss appears to be upward. Major efforts by public and private agencies were continued during the year to salvage dead and dying trees.

PINE WEEVILS, Hylobius, Pachylobius, Pissodes, and Cylindrocoptorus spp. Several species of pine reproduction weevils were reported to be particularly destructive to pine seedlings and reproduction in many sections of the country. At times, a single weevil species was responsible for damage or tree-killing; at other times, two or more species were found in the infestation areas. Hylobius and Pachylobius spp. occurred in concentrated numbers in slash pine planting areas in parts of Florida and the same insects were reported to be quite common in other states in the South and Southeast where pine plantings were made in areas recently logged. P. approximatus Hopk. was reported to be increasing in numbers and causing considerable damage in various sections of Ohio and in adjacent states where cutting in pine plantations has been heavy for Christmas trees. H. radicis Buch. was noticeably heavier in red pine and jack pine plantations in northwestern Wisconsin, in western Michigan, and at scattered locations in Minnesota. In all areas, this weevil was most severe in sandy soils. Pissodes strobi (Peck) also was noticeably heavier during 1958 in St. Lawrence County New York and in northwestern Wisconsin and Lower Michigan. In the Lake States, as much as 15-20 percent of the red pine and over 40 percent of the jack pine in plantations were found to be weeviled. In California, Cylindrocoptorus eatoni Buch. caused severe killing of sapling-sized ponderosa pines on a portion of the Stanislaus National Forest but the pest was not reported from other areas in the state where infestations have been severe in past years.

Control of pine reproduction weevils in the southern and southeastern States is being accomplished by delaying the planting of trees for about 9 months after areas are logged. Dipping seedlings in insecticidal solutions also is proving satisfactory for control. Aerial application of DDT was used for control of Cylindrocoptorus in California and lead arsenate and lindane was applied by ground methods for control of P. strobi in Pennsylvania, Michigan and New York.

SPRUCE BUDWORM, Choristoneura fumiferana (Clem.) - The spruce budworm, a major pest of mixed conifer forests in all sections of the country, continued in epidemic status in susceptible host type in many areas from coast to coast. The most extensive infestations occurred in the northern Rocky Mountains where nearly six million acres have been defoliated to one degree

or another since the budworm epidemic developed there in the late 1940's. The rate of increase of new infestations in this region during the past two years has been less than heretofore and extension of the older outbreaks in 1958 was not great. However, total area of active infestations in Montana and north Idaho now occur on 3,521,700 gross acres. Control of these infestations was not attempted during 1958.

Budworm infestations in the Lake States also are extensive and defoliation during 1958 increased over prior years. Although some 1,300,000 acres of balsam fir forests in Michigan, Wisconsin and Minnesota are infested, defoliation in most areas was not severe. However, to avert tree mortality in severely defoliated areas aerial spraying was undertaken and 12,000 acres were treated in northern Minnesota.

Increasing infestations over relatively large areas also were reported from portions of southern Colorado and from northern New Mexico. In Colorado, defoliation was noted on more than 172,000 acres and in New Mexico on some 200,000 acres. In these two states, tree defoliation in some portions of the infested areas was severe and fear is expressed that the host type will be threatened if the trend of populations continues to rise. There are no plans currently, however, for initiation of control.

In Maine, outbreak populations occurred on nearly three million acres but aerial spraying on 302,000 acres in that state reduced most infestations to endemic levels. However, subsequent to the aerial spraying program, an appreciable egg population was found along the western and southern edges of the sprayed area and heavy infestations occur therein for the first time in many years.

In eastern Oregon, budworm populations were particularly severe on a large acreage but aerial spraying on 818,000 acres reduced those infestations to the lowest levels since 1947. Although some 315,000 acres remain infested, the population trend is downward and need for additional controls is not anticipated in the near future.

Although spruce budworm infestations in California are restricted to the northeastern corner of the state, the severity of defoliation during the year increased and infestations spread southward.

BLACKHEADED BUDWORM, Acleris variana (Fern.)- The black-headed budworm is a periodic pest of western hemlock and sitka spruce in coastal Alaska and in the hemlock alpine fir stands in the northern tier of western states. After a lapse of two years, the insect again was found in the hemlock stands of southeast Alaska and although light and moderate defoliation during the year was restricted to the vicinity of Ketchikan, increased budworm activity there and elsewhere in southeast Alaska is expected during 1959. The widespread infestations reported on the Kootenai National Forest in Idaho in 1957 subsided and now occurs on only 1,500 acres in

that area. The outbreak on some 253,000 acres in western Washington during 1957 also declined to 2,720 acres and complete collapse of this infestation is expected during the current year. A small sub-epidemic infestation on sub-alpine fir along the Tollgate-Troy ridge in eastern Oregon flared up during the summer months but was quelled by high larval parasitism during the fall months. In Idaho, an infestation on some 50,000 acres of alpine fir is restricted to high altitude ridge tops. There was no need in any infestation area for direct action in control.

JACK-PINE BUDWORM, Choristoneura pinus Free. - Populations of this major pest of jack-pine in the Lake States were much reduced from levels occurring there during the past several years. However, an extensive area of host type on a portion of the Indian Sioux Roadless area in northern Minnesota was defoliated during 1958 and a moderate infestation occurred on the lower Penninsula of Michigan. It is of interest that extremely light populations were reported in northwestern Wisconsin where epidemic infestations were present during 1956 and 1957. No direct action was needed in any area for control.

LARCH AND SPRUCE BUDMOTHS, Zeiraphera spp. - Two species of budmoths have been in epidemic status in portions of Oregon and Washington for the past several years. The larch budmoth, Z.griseana (Hbn.) in western larch stands on the Snoqualmie and Wenatchee National Forests in Washington increased during the year but populations attacking Douglas-fir and white fir in both eastern and western Oregon continued light and caused no appreciable damage. Z.ratzeburgiana Sax. which has been in outbreak status in stands of sitka spruce along the coastal areas of Oregon and Washington declined to a few small spots and damage from the defoliation was slight.

DOUGLAS-FIR TUSSOCK MOTH, Hemerocampa pseudotsugata McD. - Five separate outbreaks of Douglas-fir tussock moth were reported from New Mexico, Arizona and Idaho. One outbreak, first discovered on 125 acres on Pinal Mountain, Tonto National Forest, Arizona in 1957, now occurs on 2,500 acres. Another outbreak, first discovered in 1958 on Mt. Baker on the same national forest, is 3,000 acres in size. In New Mexico, some 300 air miles distant from the outbreaks in Arizona, the moth was found in outbreak status at two separate locations. One is on the Lincoln National Forest in the southern part of the state; the other is in the Sandia Mountains east of Albuquerque. Defoliation of white fir in the outbreak areas has been severe and tree mortality is expected in lieu of suppressive controls.

The 10,000 acre tussock moth outbreak reported from Owyhee County in southern Idaho was practically eliminated during the year by a virus disease affecting the larval population. This is the second time in 10 years that outbreaks of tussock moths have been brought under control by a virus disease in this area. A closely related tussock moth, species unknown, was discovered in epidemic numbers on range plants in the foothills between Carson City and Reno, Nevada.

NEW MEXICO FIR LOOPER, Galenara consimilis Hein. - An infestation of New Mexico fir looper, endemic in New Mexico since 1952, was discovered on some 1,500 acres in the Capitan Mountains during the late fall months. The looper population currently is being held in check by a fungus disease and some 50 percent of the pupae collected from the soil in December were infected. The Douglas-fir tussock moth also occurs in outbreak status in the looper infestation area and combined feeding by both insects has been such that tree mortality is imminent on some 600 acres.

PINE BUTTERFLY, Neophasia menapia (Feld.) - The pine butterfly, a periodic pest of ponderosa pine in the western states, was found on some 50,000 acres on the Salmon National Forest in Idaho during the summer months. Damage to host trees was not great but egg deposition in the entire area is sufficient to cause concern that a new epidemic may be in the making.

PINE NEEDLEMINERS, Recurvaria and Argyresthia spp. - Damaging infestations of pine needleminers were reported at several locations during the year. The epidemic of Recurvaria milleri Busk. which has persisted for the past several years at Toulumne Meadows, Yosemite National Park, California continued unabated in the lodgepole pine forests at that location and spread to additional areas as well. The pest was found at a new location on the Stanislaus National Forest and was reported as being abundant there, on a portion of the Inyo National Forest, and at Sequoia-Kings Canyon National Park. In addition, this species also occurred in outbreak numbers in a large area on a portion of the Sawtooth National Forest in Idaho and on 1,500 acres in the Targhee National Forest in the same state. In these latter areas, defoliation has not resulted in tree-killing. At Yosemite National Park, however, defoliation is now causing mortality of trees and in lieu of suppressive controls, the entire stand of lodgepole pine currently affected is expected to be killed. Insecticidal formulations dispersed by aircraft and helicopter are being tested for control at Yosemite in hopes of saving the lodgepole pine in the most heavily used recreational areas.

Another Recurvaria sp. which occurred in outbreak status in the Southwest during 1956 and 1957 disappeared during 1958. In contrast, two new outbreaks of this unknown species occurred in Colorado; one was reported from the vicinity of Durango and the other from an area southwest of Colorado Springs. Damage to trees in both areas, however, was not great.

During the early spring months, an outbreak of a needleminer of the genus Argyresthia caused extensive discoloration of foliage of ponderosa pine on the Warner District of the Freemont National Forest in southeastern Oregon and there was fear that the attacked trees might be killed or so weakened as to be particularly susceptible to bark beetles. However, the mined needles dropped during the fall months leaving the trees in apparently healthy condition. Furthermore, at the time of pupation, the needleminer suffered considerable mortality from unknown causes and the infestation is not now a threat to the pine stand in this area.

PANDORA MOTH, Coloradia pandora Blake - A light infestation of the pandora moth on ponderosa pine was reported from along the McKenzie Highway on the Deschutes National Forest in eastern Oregon. Feeding of the new brood occurred during September and October but the heavy feeding will occur in 1959 when the caterpillars mature. It is of interest that this new infestation occurs in the same general area where an outbreak of the same species appeared 25 years ago. The former outbreak subsided from natural causes without causing appreciable damage to the resource attacked.

SPEAR-MARKED BLACK MOTH, Eulype hastata L. - Stands of paper birch over relatively large areas in the vicinity of Fairbanks, Alaska were severely defoliated by the spear-marked black moth during the summer months of 1957. This insect pest, undetermined at that time, and not previously known to occur in Alaska, increased in numbers during the year and spread to a gross area of 5,829,000 acres. Heavy defoliation occurred on 333,000 acres but a sharp decline in the population, caused by a granulosis virus and insect parasitism, was noted in mid-season. The infestation is expected to decrease further in 1959. Direct action for control was not needed.

TENT CATERPILLARS, Malacosoma spp. - Tent caterpillar infestations were reported from various sections of the country and heavy populations in some areas caused severe defoliation of host trees. In the western states, M. fragilis Stretch was particularly prevalent. Aspen stands in Colorado, for example, were completely defoliated on 130,000 acres and cumulative damage for as much as 9 years is causing severe mortality of trees on 1,180 acres. Infestations also were abundant in Utah, Idaho, New Mexico, Montana and Arizona. One of the more serious of these infestations was on the Cache National Forest in Utah, where chokecherry and several brouse plants were completely stripped. The trend of infestations in Arizona and New Mexico was downward and acreage of defoliation in those states was somewhat less than in prior years.

The forest tent caterpillar, M. disstria Hbn. was reported to be quite prevalent in many areas in Montana and North Idaho and for the first time in 4 years, infestations appear to be increasing in those areas. The same species also increased in numbers in the Lake States and along the East Coast and infestations were particularly severe in Pennsylvania, West Virginia, Wisconsin and Minnesota. In the latter state, defoliation of aspen occurred on 185,000 acres and lesser amounts of feeding on an additional 625,000 acres.

The severity of tree defoliation in heavily used recreational areas in Colorado, Utah, New Mexico and Arizona prompted land-managing agencies to initiate suppressive controls. Although most areas needing control action were of small size, a total of 6,100 acres were treated during the year.

PINE SAWFLIES, Diprion and Neodiprion spp. - Several species of pine sawflies were reported in outbreak status from many sections of the country. In some places, defoliation was severe over large areas; in others, trees on smaller areas were defoliated to a lighter degree. N.pratti pratti (Dyar) occurred sporadically on Virginia pine in a broad zone from northern Virginia south to North Carolina, a gross area of approximately 2,750,000 acres. In Florida, some 300,000 acres of loblolly pine in five counties were partially defoliated by species identified as N. excitans Roh., N.lecontei (Fitch), N. abbottii (Leach), and N. compar (Leach). N. excitans Roh. also was identified as the species causing defoliation of scattered areas of loblolly pine in southeast Texas and N. lecontei defoliated young plantations of all southern pine species at various places in the southern states. N. taedae linearis Ross was reported from southern Arkansas and northern Louisiana but defoliation was usually light. In Missouri, the widescale infestation of the latter species in 1957 failed to reappear altogether.

Several other sawflies caused noticeable damage to natural and planted pines in the northeastern states. A species attacking pitch and short leaf pine, believed to be N. pratti paradoxicus Ross occurred on over 1,630 square miles in south-central New Jersey; N. sertifer (Geoff.) was abundant locally in portions of New York, Connecticut, New Jersey and Pennsylvania and, N. lecontei increased in such numbers in New York that applied control may be needed to prevent tree-killing on large acreages in 1959. In the Lake States, infestations of N. lecontei were reported as severe in portions of Michigan and Wisconsin and control is forecast for 1959. Other species, such as N. sertifer, N. pratti banksianea Roh. and D. similis (Htg.) all occurred in portions of Minnesota, Wisconsin and Michigan. N. pinetum (Nort.) was reported to have caused complete defoliation of white pine in some places in Ohio but heavy infestations did not cover large acreages. N. fulviceps complex was noted defoliating ponderosa pine in the vicinity of Grants, New Mexico but no tree mortality occurred in the affected area. An unidentified Neodiprion species defoliated lodgepole pine on two islands in Granby Reservoir, Colorado and a small spot infestation on the same tree species was reported on the Willamette National Forest in central Oregon. This latter species has occurred over extensive areas in Oregon in prior years, last reported on some 70,000 acres in 1953.

BALSAM WOOLLY APHID, Chermes piceae (Ratz.)- The balsam woolly aphid was first discovered in the Pacific Northwest in 1954. Since then, the extent and severity of infestations increased rapidly in each succeeding year. In 1958, however, intensity of damage in both Oregon and in Washington decreased. Nevertheless, very aggressive bole infestations were prevalent in the subalpine fir stands in the Cascade Range late in the season, indicating that the epidemic may increase in severity in these stands during 1959. In Pacific silver fir, the heaviest centers of damage are in the Green, Toutle and Kalama River drainages on the Gifford Pinchot National Forest in Washington. However, considerable improvement of damaged trees was

noted in the Lewis River drainage. The insect was discovered in Mt. Ranier National Park for the first time and this marks the northernmost point the insect has been found in Washington.

Damage by the aphid in the northeastern states also is assuming truly serious proportions and tree mortality is occurring throughout most of Vermont and in the White Mountain National Forest in New Hampshire. In Maine, an apparent increase in populations resulted in more gout-injury to trees along the coast and on the Penobscot Experimental Forest near Bangor. In the latter area, stem attacks also are more severe and tree-mortality appears imminent.

In the Southeast, this aphid, previously thought to be C. nusslini Bor. was responsible for the killing of thousands of Fraser firs on Mt. Mitchell, North Carolina and infestations now are known in Virginia as well. Estimates from surveys indicate that some 25 percent of the fir resources on Mt. Mitchell are now dead and that 90 percent of the remaining trees are threatened.

In lieu of suitable measures to combat aphid infestations by direct means, major efforts were made during the year to introduce predators from Europe and Japan for biological control. The severity of tree-killing by the aphid in all areas of infestations has prompted a stepped-up program by landowners and land-managers to salvage dead and dying trees.

EUROPEAN PINE SHOOT MOTH, Rhyacionia buoliana (Schiff.) - The severity and extent of European pine shoot moth infestations during 1958 continued at about the same levels and in the same parts of the country as in the past several years. The moth was present throughout Ohio wherever red pines occurred in plantations and infestations ranging from light to heavy also were reported from many parts of Indiana. Populations were particularly high in Carbon County, Pennsylvania and in portions of West Virginia, New York, southern Connecticut, and in Lower Michigan, parts of Wisconsin, and in Minnesota.

Other Rhyacionia moths also occurred at about the same level of intensity and in the same parts of the country as reported in prior years. R. frustrana (Comst.) and R. rigidana (Fern.) caused severe damage to shortleaf pine plantations at several locations on the Brownstown Ranger District, Hoosier National Forest, Indiana; in "The Pounds" area on the Shawnee National Forest in the same state; and in eastern Maryland. Moderate to severe infestations were reported throughout Ohio, in Delaware, in most of the southern states, and all of the southeastern states. An undetermined species was reported as causing considerable damage to ponderosa pine reproduction on the Custer National Forest in Montana.

An expanded program of research on biology, ecology and control of shoot moths lead to the development of more suitable methods to suppress

infestations in plantations and pilot control tests on some 500 acres of red pine plantations were conducted in southern Michigan and in Pennsylvania. Preliminary results of these tests indicate satisfactory control.

GYPSY MOTH, Porthetria dispar (L) - The gypsy moth was generally at a lower level in the northeastern states during the year and in the newer infestation area in Michigan as well. Aerial spraying programs by the states and the Federal government were needed, however, to suppress populations in Pennsylvania, New York, Connecticut, Massachusetts, and Maine. No spraying was undertaken in Michigan. Total area sprayed in all states amounted to 510,000 acres.

ELM SPANWORM, Ennomos subsignarius (Hbn.) - Defoliation of hardwoods by the elm spanworm in the mountains of Georgia, Tennessee, and North Carolina occurred on a much larger acreage in 1958 than was reported in 1957. Currently, infestations are known to occur on more than a million acres of which a half million acres were severely defoliated. A pilot test was undertaken during the year to determine timing and dosages of DDT sprays needed for control of this pest species. If natural factors fail to bring this infestation under control, aerial application of DDT sprays may be needed to protect the resource affected.

SPITTLEBUGS, Aphrophora spp. - Red pine plantations in portions of Michigan, Wisconsin and Minnesota often are seriously damaged by Saratoga spittlebug, A. saratogensis (Fitch) when this insect pest is abundant, and suppressive measures for control usually are requ red to protect planted trees until they grow beyond susceptible size. Although populations of the spittlebug were quite heavy in Wisconsin and Minnesota early in the year, late spring frosts materially reduced nymphal populations and control was found to be unnecessary in many areas. In Michigan, damage within infested stands was spotty but most conspicuous in the northern Lower Peninsula. Suppressive controls were undertaken on some 4,500 acres of public and private plantations in the three states.

The pine spittlebug, A. parallela (Say) was reported to have occurred in moderate numbers in stands of white pine on the Mohican State forest in Trumbull County, Ohio but damage to host trees was not severe and control was not necessary. The latter species, or a closely related one, also was reported more common in 1958 than usual on pitch and shortleaf pines in southern New Jersey and on loblolly pine on the upper Eastern Shore of Maryland and in Delaware.

LARCH SAWFLY, Pristiphora erichsonii (Htg.) - The larch sawfly continues as a major pest of stands of tamarack in the Lake States and extent of infestations in 1958 were greater than in prior years. The intensity of infestations increased in portions of Wisconsin and Minnesota where reports were received that tree-killing occurred in many areas. In Michigan, all of the larch stands in the Upper Peninsula suffered at least 20 percent defoliation and some stands were more than 60 percent defoliated. It is noteworthy that an infestation affecting western larch, discovered in Missoula County, Montana, was the first record of the insect in the northern Rocky Mountains since 1944.

SPRUCE MITE, Oligonychus ununguis (Jac.) - Infestations of the spruce spider mite which erupted to epidemic proportions in stands of Douglas-fir in Idaho and Montana during 1957 were reported to be persisting on several of the national forests east of the Continental Divide in Montana. The mite populations, found to be heaviest in areas sprayed with DDT for control of spruce budworm in prior years were reported on the wane, however, and tree-killing as a result of infestations did not occur.

SPRUCE MEALYBUG, Puto sp. - The infestation of spruce mealybug in stands of Engelmann spruce in southern Utah was reported as very active in 1958. Although the area of infestation has not increased beyond the 60,000 acres infested in prior years, continued heavy feeding is rapidly reducing vigor of the mature trees and is causing some deformity in the younger trees. Another mealybug, unidentified as to genus, was reported from southern Utah. This species, attacking true firs, white bark pine, spruce and lodgepole pine, occurs on an area of some 6,000 acres. There was little or no damage to affected trees. No control was attempted in either infested area.

PINE NEEDLE SCALE, Phenacaspis pinifoliae Fitch. - Infestations of pine needle scale often are reported from place to place in the pine stands of the western states. During 1958, one outbreak on ponderosa pine was reported to have spread and became more conspicuous around orchards in the vicinity of Wenatchee, Washington. These infestations have been observed for the past several years and are attributed to the effects of spray drift from the orchards. Another outbreak center on 10,400 acres was recorded on the Colville Indian Reservation in Washington. Cause of this latter outbreak was not reported.

LARCH CASEBEARER, Coleophora laricella (Hbn.) - An outbreak of the larch casebearer, first discovered in 1957 on some 15,000 acres in the vicinity of St. Maries, Idaho, was a new locality record for this forest pest. Surveys during 1958 revealed that the insect is present on some 110 square miles in northern Idaho and northeastern Washington. Although no visible defoliation was observed outside the 15,000 acre area reported in 1957, the insect was found in small numbers north to Sandpoint, Idaho and Chewelah, Washington. The southern edge of the infestation is believed to be in the vicinity of Clarkia, Idaho.

PINE LEAF APHID, Pineus pinifoliae Fitch - The pine leaf aphid which was particularly abundant in the northeastern states during 1957 was much reduced in 1958. However, the areas where infestations have persisted for as long as five years affected trees are being killed. Lower levels of infestations also were reported from the Lake States where the insect was quite prevalent in past years. Another aphid, tentatively identified as P. coloradensis Gill was reported from extensive areas in Montana and North Idaho and although affected trees were not killed, there was a serious loss of 2 and 3-year old needles which caused deterioration of crowns of attacked trees. The pine bark aphid, P. strobi (Htg.) was reported as abundant on white pine in nearly all of the Northeastern States and particularly abundant in the vicinity of Parsons, West Virginia, in portions of Maine, and in New York.

FALL WEBWORM, Hyphantria cunea Drury. - The fall webworm was reported from many areas throughout the country but infestations in most places were not viewed with particular alarm. Trees and shrubs in a rather large area west of Ft. Collins, Colorado and south to Colorado Springs were severely defoliated during the year and cumulative effects of defoliation is depleting shade trees and esthetic values in those areas. The webworm also was common in the southern part of the Lower Peninsula of Michigan where it caused complete defoliation of ash in affected areas. Wherever infestations occurred in areas heavily used by recreationalists, populations were suppressed by direct means.

THE LARGE ASPEN TORTRIX, Archips conflictana Wlkr. - The large aspen tortrix was reported to have caused light to moderate defoliation on 220,450 acres of aspen on the Grand Mesa, Uncompahgre, Gunnison, and San Juan National Forests in Colorado, and throughout most of the Upper Peninsula of Michigan. Tree-killing was not reported in any area where defoliation was extremely heavy, and no measures were undertaken for control. An unidentified leaf-roller, also on aspen, was reported on 1,300 acres in northern New Mexico.

The fruit tree leaf-roller, A. argyrospila (Wlkr.) which occurred in epidemic numbers in the Lower Peninsula of Michigan in 1957 was drastically reduced by parasites and late spring frosts.

ORANGE-STRIPED OAK WORM, Anisota senatoria A & S. - Reports were received that severe defoliation in a wide area in the Connecticut River Valley and in Rhode Island was caused by the orange-striped oakworm, and that the pest was unusually abundant in southern New Jersey, Maryland and in Pennsylvania. In the vicinity of Tamworth, New Hampshire, A rubicunda was reported to have caused heavy defoliation of sugar and red maple. In Lower Michigan, the red-humped oakworm, Symnerista albiscosta (Hbn.) defoliated some 21,000 acres of oak woodland. No control was needed for infestations in any areas.

ASPEN LEAF MINER, Phyllocnistis populiella Chamb. - The aspen leaf miner has been in epidemic status for some 10 years on four national forests in western Wyoming and southwestern Idaho. The infestations were reported active again in 1958 and nearly all of the aspen foliage in affected areas has been heavily mined. On the Teton National Forest, much of the foliage on affected trees has been stunted and some patches of aspen up to ten acres in size have been killed. Thus far, there has been no effort made to suppress populations by direct means.

INSECT PESTS OF SEEDS AND CONES OF CONIFERS. - The status of insects affecting the seeds and cones of coniferous trees is not known in detail except where special surveys are undertaken to determine their abundance and destructiveness. In California, such surveys were undertaken, and cone moths, seed chalcids and midges were reported as causing serious damage to the 1958 seed crop from Jeffrey, ponderosa and sugar pine, and Douglas-fir. Cone moths were identified as belonging to the genera Barbara, Dioryctria, Laspeyresia, and Hedula; the seed chalcid as Megastigmus spermotrophus Wachtl.; the midges as Contarinia sp., and the cone beetles as Conophthorus spp. Seeds and cones in some areas examined were less seriously affected than others, but generally, damage was so great that seeds could be collected profitably only in a few areas. Public and private agencies are exploring suitable methods for control of cone and seed insects, particularly in areas set aside as seed orchards.

C. resinosae Hopk. was reported to be abundant in portions of Michigan where new growth on red pine poles and larger trees was damaged. In this area, the cone beetle attacked new shoots of trees only because the 1958 cone crop was scarce.

TULIPTREE SCALE, Toumeyella liriodendri (Gmel.) - Heavy infestations of tuliptree scale were reported in localized areas in southern Kentucky, throughout Ohio, and in southern Illinois. In these latter areas, young reproduction as well as merchantable-sized trees were severely damaged.

WALNUT CATERPILLAR, Datana integerrima G.&R. - The walnut caterpillars caused moderate to complete defoliation of black walnut in southern Ohio, northern Kentucky, and at a few places in other of the Central States. The insect also occurred in outbreak numbers at Carlsbad Caverns National Park in southeastern New Mexico but excessive damage to affected trees was averted by mist-blower application of DDT sprays. D.ministra (Drury) caused noticeable damage in New Castle County, Delaware and the insect appears to be generally present in the complex of hardwood defoliators from Massachusetts southward to Maryland.

MIMOSA WEBWORM, Homadaula albizziae Clarke - Heavy infestations of mimosa webworm were reported from the vicinity of Indianapolis and Dayton, Ohio and lighter infestations occurred generally over the western portion of Ohio, in central Indiana, and in western Kentucky. Although the insect

occurs in other states in the eastern half of the country, no reports were received of outbreak infestations in any of these areas.

BAGWORM, Thyridopteryx ephemeraeformis (Haw.) - Bagworms defoliating and killing white pines were reported from Delaware County, Ohio where trees were infested with 200 to 300 bagworms per foot of tree-height. In Delaware, Maryland and New York, populations also were abundant and injurious to red cedar and arborvitae.

SADDLED PROMINENT Heterocampa guttivitta (Wlkr.) - At periodic intervals the saddled prominent is a serious pest of birch in the eastern states. In 1956 a large-scale outbreak was reported in portions of several of the northeastern states but by 1957, all infestations had collapsed from natural causes. In 1958, a new infestation was reported on the southwestern slopes of Bald Mountain in New Hampshire. Extent of this infestation is not known.

MAPLE LEAF CUTTER, Paraclemensia acerifoliella (Fitch) - The maple leaf cutter defoliated several thousand acres of maple in Lewis County, New York and infestations in local areas were reported from most of Vermont. Generally speaking, infestations of this insect seldom require suppressive measures for control and none were undertaken in 1958.

VARIABLE OAK LEAF CATERPILLAR, Heterocampa manteo (Dbldy.) - The variable oak leaf caterpillar was very abundant in several sections of Delaware and Maryland. In the latter state, infestations were reported to be concentrated in Cecil County with most severe defoliation in the vicinity of Port Deposit and Principio Furnace.

RED-PINE SCALE, Matsucoccus resinosae B&G. - No change was reported in the status of red-pine scale infestations in the generally infested area in the vicinity of Bridgeport, Connecticut. Low winter temperatures may have killed portions of the brood of this pest thus resulting in a lessening of tree-killing from the level sustained in past years.

TEXAS LEAF-CUTTING ANT, Atta texana Buckley. - Damage to planted seedlings by the Texas leaf-cutting ant was reported from several areas in East Texas and in Louisiana. Although the ants are not usually destructive to forest trees, they often become pests of pine seedlings and reproduction during the winter months when other green plants are unavailable. The ants appear to have become more abundant in recent years, presumably because of drier soil in drought areas.

Washington 25, D. C.
April 22, 1959